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CoE 197S 2s2021 ME8 Activity 06: NETWORKING

I. LISTING NETWORKS

```
C:\Users\Richard Mendoza>docker network ls
NETWORK ID     NAME      DRIVER    SCOPE
153d23b8efa8   bridge    bridge    local
645c0714c9d8   host      host      local
b429f9916a0b   none      null      local
```

II. THE DEFAULT BRIDGE NETWORK

1. Inspect bridge: ‘docker network inspect bridge’

```
C:\Users\Richard Mendoza>docker network inspect bridge
[
    {
        "Name": "bridge",
        "Id": "153d23b8efa899bc84ecd8afd74f3ff4c2dfec60a615839208ca27876675ca33",
        "Created": "2022-06-07T13:12:34.3808296Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": null,
            "Config": [
                {
                    "Subnet": "172.17.0.0/16",
                    "Gateway": "172.17.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {},
        "Options": {
            "com.docker.network.bridge.default_bridge": "true",
            "com.docker.network.bridge.enable_icc": "true",
            "com.docker.network.bridge.enable_ip_masquerade": "true",
            "com.docker.network.bridge.host_binding_ipv4": "0.0.0.0",
            "com.docker.network.bridge.name": "docker0",
            "com.docker.network.driver.mtu": "1500"
        },
        "Labels": {}
    }
]
```

2. Start ping container

```
C:\Users\Richard Mendoza>docker run --rm -d --name dummy rmendoza24/ping:1.0
4ab17512d1a44f33e9b1f8bf6296e2e9db9776390501df13f7b0b988c15bbdc4
```

```
        "ConfigOnly": false,
        "Containers": {
            "4ab17512d1a44f33e9b1f8bf6296e2e9db9776390501df13f7b0b988c15bbdc4": {
                "Name": "dummy",
                "EndpointID": "af749172fe5ac99887a3348533d9c0dd897b39ed197852ff14130410f91934f4",
                "MacAddress": "02:42:ac:11:00:02",
                "IPv4Address": "172.17.0.2/16",
                "IPv6Address": ""
            }
        },
        "Options": {
```

3. Running ping with target:dummy

```
C:\Users\Richard Mendoza>docker run --rm -d -e PING_TARGET=172.17.0.2 --name pinger rmendoza24/ping:1.0
d07a95b0e5d97cad7ae82c926a3ba317b71d7300d5e836ec3ae33203a03afcfc

C:\Users\Richard Mendoza>docker ps
CONTAINER ID   IMAGE                  COMMAND                  CREATED         STATUS         PORTS     NAMES
d07a95b0e5d9   rmendoza24/ping:1.0    "sh -c 'ping $PING_T…"   4 seconds ago   Up 3 seconds             pinger
4ab17512d1a4   rmendoza24/ping:1.0    "sh -c 'ping $PING_T…"   3 minutes ago   Up 3 minutes             dummy

C:\Users\Richard Mendoza>docker logs pinger
PING 172.17.0.2 (172.17.0.2) 56(84) bytes of data.
64 bytes from 172.17.0.2: icmp_seq=1 ttl=64 time=0.919 ms
64 bytes from 172.17.0.2: icmp_seq=2 ttl=64 time=0.049 ms
64 bytes from 172.17.0.2: icmp_seq=3 ttl=64 time=0.120 ms
64 bytes from 172.17.0.2: icmp_seq=4 ttl=64 time=0.128 ms
64 bytes from 172.17.0.2: icmp_seq=5 ttl=64 time=0.158 ms
64 bytes from 172.17.0.2: icmp_seq=6 ttl=64 time=0.118 ms
64 bytes from 172.17.0.2: icmp_seq=7 ttl=64 time=0.089 ms
64 bytes from 172.17.0.2: icmp_seq=8 ttl=64 time=0.134 ms
64 bytes from 172.17.0.2: icmp_seq=9 ttl=64 time=0.138 ms
64 bytes from 172.17.0.2: icmp_seq=10 ttl=64 time=0.054 ms
64 bytes from 172.17.0.2: icmp_seq=11 ttl=64 time=0.136 ms
C:\Users\Richard Mendoza>docker run --rm -d -e PING_TARGET=dummy --name pinger rmendoza24/ping:1.0
b2c26d7a78be75c0fe95560ba75d323b32aded2cfd1c1936ce260f583afcd34d

C:\Users\Richard Mendoza>docker ps
CONTAINER ID   IMAGE                  COMMAND                  CREATED         STATUS         PORTS     NAMES
4ab17512d1a4   rmendoza24/ping:1.0    "sh -c 'ping $PING_T…"   7 minutes ago   Up 7 minutes             dummy
```

II. MANAGING CUSTOM NETWORKS

```
C:\Users\Richard Mendoza>docker network create skynet
b855ac36c2af191cb8a2bdc2bf63782d9622c5f7b321eee178aac8d56ebb8572

C:\Users\Richard Mendoza>docker network ls
NETWORK ID     NAME      DRIVER    SCOPE
153d23b8efa8   bridge    bridge    local
645c0714c9d8   host      host      local
b429f9916a0b   none      null      local
b855ac36c2af   skynet    bridge    local

C:\Users\Richard Mendoza>docker network inspect skynet
[
    {
        "Name": "skynet",
        "Id": "b855ac36c2af191cb8a2bdc2bf63782d9622c5f7b321eee178aac8d56ebb8572",
        "Created": "2022-06-07T16:50:54.7814445Z",
        "Scope": "local",
        "Driver": "bridge",
        "EnableIPv6": false,
        "IPAM": {
            "Driver": "default",
            "Options": {},
            "Config": [
                {
                    "Subnet": "172.18.0.0/16",
                    "Gateway": "172.18.0.1"
                }
            ]
        },
        "Internal": false,
        "Attachable": false,
        "Ingress": false,
        "ConfigFrom": {
            "Network": ""
        },
        "ConfigOnly": false,
        "Containers": {},
        "Options": {},
        "Labels": {}
    }
]
```

III. ADDING CONTAINERS TO A NETWORK

```
C:\Users\Richard Mendoza>docker run --rm -d --network skynet --name dummy rmendoza24/ping:1.0
2f69b88c00edd21f08df8b5a1b909db8a5eb7c3038392fad7a1690e544f017dd

C:\Users\Richard Mendoza>docker run --rm -d --network skynet -e PING_TARGET=dummy --name pinger rmendoza24/ping:1.0
3b7db292ef800ec709986e5600d513e51bfb608573caec9b0d786d82e5b4bf51

C:\Users\Richard Mendoza>docker logs pinger
PING dummy (172.18.0.2) 56(84) bytes of data.
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=1 ttl=64 time=0.262 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=2 ttl=64 time=0.072 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=3 ttl=64 time=0.128 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=4 ttl=64 time=0.127 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=5 ttl=64 time=0.191 ms
64 bytes from dummy.skynet (172.18.0.2): icmp_seq=6 ttl=64 time=0.072 ms
```

IV. CONNECTING BETWEEN CONTAINERS IN A NETWORK

// Took more than 3 hours finding the changes needed in the command:
//POSTGRES_HOST_AUTH_METHOD=trust needed

```
C:\Users\Richard Mendoza>docker run --rm -d --name gadgetdb --network skynet -p 5432 -e POSTGRES_HOST_AUTH_METHOD=trust postgres:latest
6ef321a800e61c8509374a7a166c6c32ca8c35a7d1947a28ef8bcf4658ad6241

C:\Users\Richard Mendoza>docker ps
CONTAINER ID   IMAGE             COMMAND                  CREATED         STATUS         PORTS                     NAMES
6ef321a800e6   postgres:latest   "docker-entrypoint.s…"   5 seconds ago   Up 2 seconds   0.0.0.0:58598->5432/tcp   gadgetdb

C:\Users\Richard Mendoza>docker run --rm -d --name widgetdb --network skynet -p 5432 -e POSTGRES_HOST_AUTH_METHOD=trust postgres:latest
19eff359efa0dca7f45128a6a75bb0f6be39e39c1ea3d379996fe46bfe14ed25

C:\Users\Richard Mendoza>docker ps
CONTAINER ID   IMAGE             COMMAND                  CREATED          STATUS          PORTS                     NAMES
19eff359efa0   postgres:latest   "docker-entrypoint.s…"   3 seconds ago    Up 2 seconds    0.0.0.0:55376->5432/tcp   widgetdb
6ef321a800e6   postgres:latest   "docker-entrypoint.s…"   20 seconds ago   Up 18 seconds   0.0.0.0:58598->5432/tcp   gadgetdb
```

```
C:\Users\Richard Mendoza>docker exec -it widgetdb /bin/bash
root@19eff359efa0:/# psql -U postgres
psql (14.3 (Debian 14.3-1.pgdg110+1))
Type "help" for help.

postgres=# \q
root@19eff359efa0:/# psql -U postgres -h gadgetdb
psql (14.3 (Debian 14.3-1.pgdg110+1))
Type "help" for help.

postgres=# \q
root@19eff359efa0:/# exit
exit

C:\Users\Richard Mendoza>docker stop widgetdb gadgetdb
widgetdb
gadgetdb
```

V. BINDING PORTS TO HOST

// psql utility not completely installed. Don't know which packages are needed.

```
C:\Users\Richard Mendoza>docker run --rm -d --name widgetdb --network skynet -p 5432:5432 postgres
2ada552dda0c31c75c66d480608dc7cb82b3efc11c10d648668b33d11321064a

C:\Users\Richard Mendoza>psql -U postgres -h localhost
'psql' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Richard Mendoza>docker stop widgetdb
Error response from daemon: No such container: widgetdb

C:\Users\Richard Mendoza>docker ps -a
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
```